Novel Mechanism for the Generation of Light Highly Resistant to Atmosphere-Induced Scattering: Ultra-Rapid Rotation of Polarity in Polarity-Uniformed LASER Sources via Novel Prism Design

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Introduction

Both flash LiDAR and LASER-based communications are distinctly limited in their range except under the condition of an atmospheric vacuum. Understanding the fundamental mechanism driving the atmospheric scattering of light has led to the promulgation of a novel concept that could well shatter the paradigm that atmospheric light scattering cannot be overcome.

Applications for such a method of generating scatter-resistant light include the dramatic increase in the range of flash LiDAR systems and LASER-based communications, opening the door to the wholesale replacement of RADAR with LiDAR, the obsolescence of so-called stealth technology and high-bandwidth satellite-based data links impervious to the disruptive effects of atmosphere on LASER-based data streams.

Abstract

When light is scattered by atmosphere, its angular momentum deviates with each interaction with the electron clouds of atoms composing air molecules. While it is widely believed that light is repelled/deflected uniformly regardless of its phase position, this is not the case. A novel approach based upon a new presupposition; that these course deviations actually occur exclusively at the very peaks of phase when electrons stop rotating on their own axis and temporarily lose their innate magnetic moment; is poised to shatter the existing paradigm through its suggestion that the faithful transmission of photons that never entirely cease to spin on their own axis during flight may enable light to behave as if it is in an atmospheric vacuum despite the presence of atmosphere.

This may be achieved by preventing the halting of the axis spin of photons as they approach the peaks of their phase. Axis spin is brought to a stop as a result of an asymmetrical transfer of magnetic moment between two distinct groups of photons: Those that are approaching a peak in phase and those which have recently moved beyond the peak in their phase. While photons that are in the "downswing" are rotating in one direction and emitting magnetism to their rear, photons that are in the "upswing" and are slowing in terms of their rotation are rotating in the opposite direction. Given the proximity of these photons, magnetism emitted by each may serve to accelerate or decelerate the spin of a nearby photon. What is actually transpiring is the conversion of electrical energy; mediated by magnetic flow; into kinetic energy at an extremely small

scale, with this process repeating itself at an extremely high rate, producing the phasing behavior of light with which we are familiar.

As the rotation of these photons are innately counter-Magnusian, the photons in the "downswing" always spin backwards as they shift downward in phase position. The photons in the "upswing" are necessarily spinning forwards. Subtle differences between the duration of time for which magnetism is transferred from "rear" photons (behind the peak) and from "front" photons (ahead of the peak) result in an asymmetry of flow resulting from the fact one is accelerating and one is decelerating. In this system, the body sc. photon with accelerating spin will always give up less energy and the body with decelerating spin will always give up more as a result of the asymmetry of the duration for which the poles of the particle spend oriented directly toward the photons on the other side of the phase peak.

In the case that light could be emitted which was uniform in its polarity but in which that polarity shifted with each undulation of phase (implying an extremely high rate of shift,) trailing photons would, in theory, no longer be subject to these magnetic forces and their spin would not be halted. If their spin is never halted, they would tend to skirt air molecules through mutual repulsion rather than being deflected as a result of slingshots around electrons (A.K.A. reflection) in the electron clouds of the atoms comprising those molecules.

Toward the end of generating such specialized light sources, a new type of prism is required capable of transforming the polarity of polarity-uniformed light and altering it so that, when the prism is finished performing its work, light of gradated polarity would be inserted near to light of a distinct but nearly identical polarity through a process of re-integration.

A specialized, flat prism in the shape of a right triangle made concave along its longest boundary capable of gradually altering the polarity of light that begins its journey into the prism as polarity-uniformed light may be used in order to make this theory into a reality. When light is introduced into this prism, it would start out by traveling in the transverse direction of the ultimate aperture of the system along the rear-most facet of the triangular prism.

Light would be inserted symmetrically into the entry aperture so that an equal amount of light follows what might be termed "inside" and "outside" tracks. The relative position of light upon exiting from a prism of this sort can be controlled via their passage along distinct curved pathways of varying lengths. The light that takes a longer path to the exit aperture would naturally be staggered behind the light that happened to take the shorter path.

The polarity of light may be shifted in gradual, steady increments in the midst of its transit through such a prism through the collocation of weakly magnetized nodes consisting of groupings of four magnetically active molecules (one above and below the expected position of a photon at peak phase and at each peak) and in which those groupings of magnetic molecules are made to spiral, looking

much like a "spirograph" of a square as the groupings wend their way through the prism.

Light traveling the same distance through the prism would have a predictable and uniform polarity upon its exit. The greater the distance traveled through the prism, the more the polarity is altered. Eventually, the light would be re-integrated into a collimated beam in which, rather than being made to corkscrew through the application of a magnetic field at any single point (at the exit aperture, for example,) magnetism would be applied to the light through the solid-state mechanism of the prism in an asymmetrical fashion, varying, naturally, only according to the distance the light travels through the prism. During re-integration, light of varying polarities performs a "merger," much like traffic on a highway merging when the number of lanes are reduced.

Discretely, this light would simply behave as ordinary light. When integrated in a precise fashion, it "snaps into" the corkscrewing characteristic desired for this application, bypassing the need to create a magnetic field capable of light-speed switching; a theoretical impossibility.

Conclusion

Light that is composed of photons undergoing changes to polarity synchronous with their phasing would be essentially exempt from both reflection or absorption, at least in atmospheric-type media. Light, once it has undergone this restructuring may be passed through subsequent prisms (single-to-multi mode prisms for LiDAR application, for instance) and could continue to be utilized for that application without redesign of those prism systems. LiDARs as well as LASER communications systems currently featuring maximum ranges of no more than a few miles could be rendered effective over distances of 200 miles or more.